Title: Handwriting recognition using neural network
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Abstract: Pattern recognition finds its use in many fields whose development has been affected by computer science and computer technology. Among these, the conversion of handwritten or printed text into computer-encoded text has a particularly prominent position. In the presented work we propose a method for recognizing handwritten characters in real-time using feedforward neural network as the basic classification mechanism. Dealing with differences among individual instances of each handwritten character we thoroughly explored the possibility of suppressing these while emphasizing characteristics that are essential for successful recognition. For these purposes we employed discrete cosine transform, whose time-proven application in audio and video signal processing or even directly in the field of pattern recognition provided a convincing argument for us to use it in our work as well. As a means of suppressing variations among various writing instruments we proposed preprocessing of input images using binarization and skeletonization. The designed method was thoroughly tested on two sets of characters with different handwriting and it showed a very high successful recognition rate. Our work can therefore serve as a reliable basis of eventual future system for translation of a whole handwritten text into its digital form.

Keywords: pattern recognition, optical character recognition, artificial neural networks, binarization, skeletonization, discrete cosine transform